

CARNIVOROUS PLANT NEWSLETTER

Journal of the International Carnivorous Plant Society

Volume 51, No. 2

June 2022





CARNIVOROUS PLANT NEWSLETTER

Journal of the International
Carnivorous Plant Society
www.carnivorousplants.org

Volume 51, Number 2
June 2022



Front Cover: *Sarracenia leucophylla* 'Wilkerson's Red Rocket'. Photo by Kirk Simpson.
Article on page 111

Back Cover: *Sarracenia* 'Thelma's Lantern' Autumn pitchers. Photo by Bristol Q. Article
on page 121.

Carnivorous Plant Newsletter is dedicated to spreading knowledge and news related to carnivorous plants. Reader contributions are essential for this mission to be successful. Do not hesitate to contact the editors with information about your plants, conservation projects, field trips, or noteworthy events. Advertisers should contact the editors. Views expressed in this publication are those of the authors, not the editorial staff.

All correspondence regarding dues, address changes and missing issues should be sent to the Membership Coordinator at the ICPS. Do not send such correspondence to the editors. Checks for subscriptions should be made to the International Carnivorous Plant Society in US funds. Dues, including a subscription, are \$35 per year.

International Carnivorous Plant Society, Inc.
2121 N. California Blvd., Suite 290
Walnut Creek, CA 94596-7351, USA
icps@carnivorousplants.org

President
Vice President
Secretary
Treasurer
Board Member
Board Member
Board Member
Board Member
Board Member

Membership Coordinator
Webmaster
Media Coordinator
Seed Bank Manager
Facebook Manager

CPN Editors editor@carnivorousplants.org
Managing Editor Bob Ziemer
Editor Barry Rice
Editor Karl Herold
Editor John Brittnacher

Richard Nunn, richardnunn@carnivorousplants.org
John Brittnacher, john@carnivorousplants.org
Cindy Slezak, cindy@carnivorousplants.org
Daniela Ribbecke, daniela@carnivorousplants.org
Kenny Coogan, Education Director, kenny@carnivorousplants.org
Brent Jones, brent@carnivorousplants.org
Jan Schlauer, Cultivar Registrar, jan@carnivorousplants.org
Carson Trexler, Conservation Director, carson@carnivorousplants.org
Bob Ziemer, bob@carnivorousplants.org

Cindy Slezak, cindy@carnivorousplants.org
John Brittnacher, john@carnivorousplants.org
Chad Williams, chad@carnivorousplants.org
Joe Griffin, joe@carnivorousplants.org
Marcel van den Broek, marcel@carnivorousplants.org

Science Editor	Andreas Fleischmann
Science Editor	Fernando Rivadavia
Science Editor	Jan Schlauer

Date of effective publication of the March 2022 issue of Carnivorous Plant Newsletter: February 9, 2022.

The ICPS is the International Cultivar Registration Authority (ICRA) for the names of cultivated carnivorous plants according to the International Code of Nomenclature for Cultivated Plants. Send relevant correspondence to the ICPS, Inc.

Carnivorous Plant Newsletter is published quarterly in March, June, September, and December by the ICPS, Inc., 2121 N. California Blvd., Suite 290, Walnut Creek, CA 94596, USA. Periodicals postage paid at Walnut Creek, CA and additional mailing offices. Postmaster: Send address changes to ICPS, Inc., 2121 N. California Blvd., Suite 290, Walnut Creek, CA 94596, USA. Printed by Allen Press, Inc., 810 E. 10th Street, Lawrence, KS 66044. Logo and masthead art: Paul Milauskas. © 2022 International Carnivorous Plant Society. All rights reserved. ISSN #0190-9215

CONTENTS

The 13 th ICPS Conference—Japan -----	83
CPN takes another step into the digital world -----	83
Morphometry of shoots and flowers of <i>Utricularia minor</i> at a large site in the Czech Republic--	84
<i>Drosera filiformis</i> Raf. var. <i>floridana</i> Rice forma <i>albiflora</i> J.Ksepka f. <i>Nov</i> -----	92
Forked leafed <i>Drosera tracyi</i> -----	95
Purple bladderworts in Quebec: Rediscovering an unusual growth strategy -----	99
Field notes on <i>Triantha occidentalis</i> subsp. <i>brevistyla</i> (C.L.Hitchc.) Packer in Washington, USA -----	101
Captivated: The Allure of Carnivorous Plants—A non-profit documentary film -----	106
New cultivars-----	109

THE 13TH ICPS CONFERENCE—JAPAN

KOJI KONDO • 13th ICPS World Conference Organizer Team

The 13th ICPS Conference—Japan has been postponed another year. Due to the globally continuing health concerns with the COVID19 pandemic and related restrictions to travelling, the 13th ICPS World Conference organizer team has decided to postpone the conference by another year.

Our new plan is to hold the conference in Himeji City in May-June 2023. We will announce the specific dates as soon as we have reserved the venue.

CPN TAKES ANOTHER STEP INTO THE DIGITAL WORLD

JOHN BRITTNACHER • john@carnivorousplants.org

Starting with this issue of CPN, you will notice web links on most but not all articles in the form: <https://doi.org/10.55360/cpn512.br397>. This web link is a permanent link via a Digital Object Identifier (DOI) to the digital version of Barry Rice's *Triantha occidentalis* article in this issue. Entering that link into a web browser will take you to a virtual page on the cpn.carnivorousplants.org website that will display information on the article and after the six-month embargo, offer a link to download the PDF of the article.

Having a permanent DOI web link to the CPN website is convenient but that is not the main reason we are doing this. When we register a digital object such as an article PDF, we do much more than give a link to a page with a link to the PDF. We upload information about the contents of the article including the reference list with the DOIs of all articles that have DOIs. This is done as a service to the author because it increases the visibility of the article as well as CPN and the ICPS. Ultimately, we hope this step will increase the number of authors willing to publish scholarly articles of interest to members and the scientific community in CPN.

MORPHOMETRY OF SHOOTS AND FLOWERS OF *UTRICULARIA MINOR*
AT A LARGE SITE IN THE CZECH REPUBLIC

LUBOMÍR ADAMEC • Institute of Botany of the Czech Academy of Sciences • Dukelská 135 • CZ-379 01 Třeboň • Czech Republic • lubomir.adamec@ibot.cas.cz

ANDREA KUČEROVÁ • Institute of Botany of the Czech Academy of Sciences • Dukelská 135 • CZ-379 01 Třeboň • Czech Republic • andrea.kucerova@ibot.cas.cz

Keywords: Aquatic carnivorous plant, plant size, leaf node, branching rate, capsules, seed set, ecological requirements.

Received: 8 September 2021

<https://doi.org/10.55360/cpn512.la025>

Abstract: In 2021, a large population of *Utricularia minor* was found in a revitalized former sand-pit with strongly acidic and dystrophic water in the Czech Republic. The plants in the population were robust, highly branched, flowered prolifically, and set seeds. The mean length of main shoots of robust *U. minor* plants was 72 cm (range 54-90 cm). Each plant had a total of 7-17 branches. Inflorescences with at least one ripening fertile capsule were 11-33 cm long and bore 6-11 flowers or capsules at different ages. However, only two ripe fertile capsules (mean 1.21) formed at maximum in one inflorescence.

Introduction

Utricularia minor L. (lesser bladderwort) is a temperate perennial aquatic carnivorous plant with a circumboreal distribution in Eurasia and North America but also extending to Papua New Guinea (Casper 1974; Taylor 1989). *Utricularia minor* usually has monomorphic (non-differentiated) shoots 5-30 cm long that bear both filamentous or flattened photosynthetic “leaves” in regular leaf nodes and 1-2.5 mm long carnivorous traps (Taylor 1989; Fleischmann & Schlauer 2014). However, based on ecological conditions (mainly water depth or terrestrial growth), the size and morphology of the shoots are enormously variable: from a very slender thread-like habit on emergent wet soils to more robust, frequently branched habit as a submerged plant; yet partly differentiated shoots into green photosynthetic and pale carnivorous bearing the majority of traps are rather rare. Due to the ability of *U. minor* to grow both submerged and emerged, it can be considered fully amphibious. During the warmest season, the plants form an erect raceme inflorescence 3-25 cm long emerging from the water and bearing 2-6 light-yellow flowers (Casper 1974; Taylor 1989; Fleischmann & Schlauer 2014). Flowers can form ripe globose capsules 2-3 mm in diameter with several seeds.

In Europe, *U. minor* grows with a highly scattered distribution in bogs, fens, peaty fishponds, peaty meadows, backwater pools, springs, and also in shallow sand-pits. It usually grows in very shallow water 2-20 cm deep and often semi-terrestrially. The plants growing in very shallow water are usually loosely anchored in the bottom, while those growing in deeper water (>30 cm) are mostly floating freely at the surface. As opposed to the very similar but more stenotopic *U. bremii*, *U. minor* as a eurytopic species grows in a great variety of waters: within the pH from 3.5 to 9.2, in very soft to medium hard waters and in clear to strongly dystrophic (humic), dark-brown waters (Adamec 2020); *U. bremii* within the pH from ca. 5.0 to 7.5. It usually grows together with other

Utricularia species: *U. australis*, *U. intermedia*, *U. ochroleuca*, and/or *U. stygia*. In the Czech Republic, it is declared a vulnerable species (VU) of the Czech flora (Grulich 2017) with ca. 50 sites mostly in S, N, and E Bohemia (Adamec, unpubl. data), but it is not a legally protected species. In spite of the relatively high number of Czech sites, the majority of them are small, extending only several m² and consisting of a few hundreds of individuals.

Relatively very few detailed data on the morphology, growth traits, reproduction, and ecology or physiology of *U. minor* are available (see Taylor 1989; Hofmann 2001; Navrátilová & Navrátil 2005a,b; Peroutka *et al.* 2008; Fleischmann & Schlauer 2014; Adamec 2020). However, pollen morphology of *U. minor* has been described in detail (Casper & Manitz 1975; Beretta *et al.* 2014). According to both studies, the species does not form malformed pollen though ripe fertile capsules are formed only in a small proportion of flowers (Adamec, unpubl. data).

In this paper, we present morphometric investigations of shoots and inflorescences of *U. minor*, with an emphasis on shoot branching traits, formation of fertile capsules and seed set, in a numerous population of the species in a revitalized former sand-pit in the Czech Republic, and ecological requirements of *U. minor* are discussed.

Site description

Robust plants of *U. minor* were investigated in a newly revitalized, old sand-pit near Hrdlořezy in the Třeboňsko Biosphere Reserve and Protected Landscape Area in S Bohemia, Czech Republic (48.86393°N, 14.82833°E; Fig. 1). The shallow sand-pit is about 170 years old, its water depth is 20-100 cm, consists of several closely adjacent water bodies and has a total area of ca. 0.3 ha. It is closely surrounded by a Scots pine (*Pinus sylvestris*) forest growing on the wet, strongly acidic soils which causes the water in the sand-pit pools to be strongly humic.

In the autumn 2020, the *Sphagnum* carpet and organic sediments in the large southern pool were excavated stepwise to the sandy bed to the depth of 30-65 cm and the organic sediment was removed. In the 2021 growing season, *U. minor* has spread into the southern excavated pool and, due to optimal conditions, has formed a dense prolifically flowering stand with a total coverage of 60-100% in the whole pool (Fig. 1).

In the dark-brown water of the pool, robust flowering *U. minor* plants were growing near the surface in the open-water zone or were weakly anchored in floating “islands” of brown filamentous peat, which were released from the bottom after the pool excavation (Fig. 2). The *U. minor* stands represented the early successional stage of the vegetation of oligotrophic, humic water bodies, close to the vegetation of Sphagno-Utricularion alliance with scattered aquatic *Carex rostrata* plants and two submerged acidophilous species of *Sphagnum* mosses (*S. fallax*, *S. cuspidatum*). Sparsely distributed plants of both *U. minor* and *U. australis* occurred



Figure 1: Southern humic pool in a forest sand-pit near Hrdlořezy, S Bohemia, Czech Rep., inhabited by a dense stand of flowering *U. minor*, 23 July 2021.



Figure 2: Left: Detailed view on peaty floating islands with a dense stand of *U. minor*. Water depth is 30-60 cm. Right: Flowers of *U. minor*. Note relatively narrow corolla with enrolled margins.

also in the former *Equiseto fluviatilis*-*Caricetum rostratae* stands (Magno-Caricion elatae alliance, Šumberová *et al.* 2011) in an original, non-revitalized part of the sand-pit in some smaller pools dominated by aquatic *C. rostrata* and *Sphagnum* stands and by *Juncus effusus* on the shores.

Methods

On 23 July 2021, we isolated 10 large *U. minor* plants and measured the length of the shoots using a plastic ruler. Very carefully, we isolated another 14 large plant individuals from the open-water zone in order to estimate the detailed shoot structure with an emphasis on branching traits (after Adamec 2011a): total main shoot length in terms of the number of mature leaf nodes, number of 1st- and 2nd-order branches and their length in term of the number of mature leaf nodes, number of internodes between two successive branches in main shoots and branches, number of inflorescences, and the dry weight (DW, 80°C). As the plants were strongly entangled with each other, it was very difficult to separate quite intact plant individuals. Thus, most plants were slightly damaged and the estimated values can be considered partly conservative. Some plants were flowering. The collected plants were transported in water in a bucket to the laboratory for processing. Using a battery-powered conductometer, electrical conductivity was measured in two different parts of the



Figure 3: Left: Ripe capsules of *U. minor* from the sand-pit pool near Hrdlořezy. Ripe seeds are visible through the wall of the capsules. Right: Abortive, sterile capsules of *U. minor*. Note the small size and pale colour. Ticks indicate 1 mm.

southern pool with the dense *U. minor* stand and in other three smaller pools inhabited scarcely with *U. minor* and *U. australis* and water samples were collected for measuring pH in the laboratory. Due to very low pH, the measured conductivity was corrected for the measured pH (subtraction of 3.25 mS/m for the pH of 4.00 and/or 100 $\mu\text{M H}^+$; Sjörs 1952).

On 4 August 2021, 14 *U. minor* plants with at least two inflorescences each were carefully separated and the internodes on the main shoot between two inflorescences were counted. Fourteen robust inflorescences each bearing at least one big ripening capsule (Fig. 3) were collected together with a part of the main shoot. In a closed vessel, they were transported to the laboratory. The length of inflorescences, number of all flowers (capsules) or developing flower buds and number of ripening fertile capsules were estimated. Capsules were scored as fertile if they were relatively big (ca. 3 mm; cf. Fig. 3). They were formed mainly in the basal part of the inflorescences; the others were considered sterile. For full ripening of the capsules and seeds, the inflorescences were then put in a closed 1 L mini-aquarium containing ca. 300 mL of dystrophic water with a bit of peat. The mini-aquarium floated in water in a big plastic outdoor container for another month and all fertile capsules could fully ripen and set seeds. The number of ripe seeds (Fig. 4) per capsule was estimated.

As the experimental plants had different numbers of branches, means of 14 individual plants were averaged. When possible, means $\pm$ SE intervals and ranges for individual plants are shown. The significant difference between comparable values was tested using the Student's t-test. The aim of the study was also to estimate what is the interrelationship of the apical shoot growth rate (ASGR, expressed as the number of newly formed leaf nodes per day) of main shoots and branches (see Adamec 1999, 2011a). As new branches are initiated on the apex of the main shoot, they grow together with the main shoot. When the number of mature leaf nodes from the apex is estimated in main shoots and long branches in a population of plants then the linear regression of these couples of data determines both the position of the main shoot, where theoretically the zero mature leaf node is formed, and the ratio between the ASGRs of main shoots and branches. The advantage of this analysis is based on no need of estimation of ASGR alone.

Results and discussion

The mean length of main shoots of robust *U. minor* plants was 71.6 ± 3.8 cm (range 54-90 cm) though only 30 cm has been stated in the literature (e.g., Casper 1974; Taylor 1989). In other plants, main shoots consisted on average of 61 mature leaf nodes (range 48-83, Table 1). The robust and frequently flowering plants had on average 8.7 ± 0.50 1st-order branches, while had only 2.0 ± 0.73 2nd-order branches and together a total of 7-17 branches. Main shoots branched on average relatively regularly after each 12.2 ± 0.92 leaf nodes, while branches did more irregularly only after 16.8 ± 4.1 leaf nodes – these values were not significantly different from each other ($P > 0.05$). Branching in

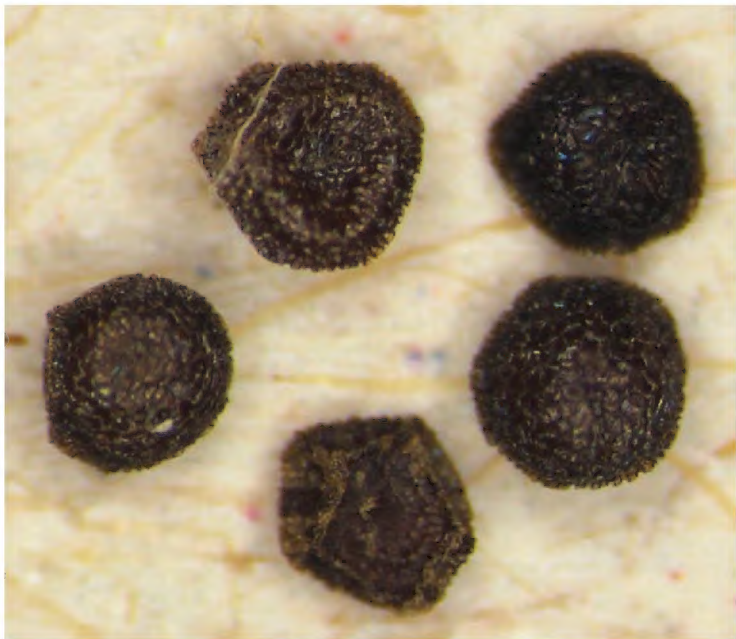


Figure 4: Ripe seeds of *U. minor*. The seed diameter is ca. 0.55 mm.

Table 1. Morphometric characteristics of robust *Utricularia minor* plants in a dense stand in a dystrophic sand-pit near Hrdlořezy, S Bohemia, Czech Republic; DW, dry weight. Means $\pm$ SE intervals based on averages for individual plants are shown, n=14. Range of values shown for individual plants.

Parameter	Main shoot length (nodes)	Number of branches per plant			Internodes between two branches		Plant DW (mg)
		1 st order	2 nd order	All	Main shoots	Branches	
Mean	60.7	8.7	2.0	10.7	12.2	16.8	37.7
SE	2.7	0.50	0.73	0.73	0.92	4.1	5.1
Range	48-83	6-13	0-9	7-17	3-30	7-41	22.3-96.5

robust (and frequently flowering) *U. minor* plants is thus similar to that in *U. australis* and photosynthetic shoots of *U. stygia* and *U. intermedia* (branching after each 5.9-22.6 leaf nodes; for the review, see Adamec 2018). In *U. minor* plants with two or more flowers, subsequent flowers occurred on average after each 10.1 $\pm$ 0.49 (median 10; range 6-13) leaf nodes of the main shoot. However, this value was not significantly different from the branching of the main shoot. Mean DW of *U. minor* plants was only 37.7 $\pm$ 5.1 mg and flowering plants had the highest DW values (Table 1). The DW values of robust *U. minor* plants are about 10-13 times lower than those of robust *U. australis* plants, but quite the same as those for *U. australis* plants from a very oligotrophic site (Adamec 2011). Therefore, even a very dense stand of robust *U. minor* possessing a slender habit can produce about one order of magnitude lower biomass than a dense stand of *U. australis*.

The linear regression of the number of leaf nodes of main shoots and branches revealed a highly significant correlation according to the linear equation:

$$\text{Nodes of branches} = 0.833 \times \text{Nodes of main shoots} - 7.46 \text{ (n=25; r=0.937; P<0.0001)}.$$

Thus, on average, main shoots started forming the first branches with mature leaf nodes and traps between the 7th to 8th mature leaf nodes as counted from the apex. Mean ASGR of branches reached only 83% of that of the main shoots. This value obviously reflects the strength of apical dominance of the main shoot apex as a sink for mineral and organic nutrients and is in line with the values found in *U. australis* (about 85% at an optimal and 65% at a barren site; Adamec 2011a) and in younger branches of *Aldrovanda vesiculosa* (67%; Adamec 1999). To the best of our knowledge, the ASGR of *U. minor* has never been measured. However, in the very similar *U. bremii* in a growth experiment, fed plants formed 2.4 new leaf nodes a day (Adamec 2011b). Assuming this ASGR also in *U. minor* and mean branching after each 12.2 leaf nodes (Table 1), a new branch could be initiated on the main shoot every ca. 5.1 days. Exactly the same branching frequency of 4.7-5.5 days was found for field-grown *U. australis* and *A. vesiculosa* (Adamec 2018). Thus, *U. minor* has a similar relative growth rate as reported for other temperate aquatic *Utricularia* species (see Adamec 2018).

Selected inflorescences with at least one ripening fertile capsule were 11.4-33.3 cm long and bore 6-11 flowers or capsules at different stages of development (Table 2, Fig. 5). However, only two ripening fertile capsules (mean 1.21) formed at maximum in one inflorescence. Single flowers formed acropetally, i.e., from the base to the apex – similarly as in other aquatic *Utricularia* species (Taylor 1989). Although small, non-opened flower buds were usually initiated at the apex of the sampled inflorescences at the time of sampling (Fig. 5), these apical flower buds occasionally

Table 2. Characteristics of ripe inflorescences of *Utricularia minor* plants. Means $\pm$ SE intervals based on averages for individual plants are shown, n=14. Range of values shown for individual plants.

Parameter	Inflorescence length (cm)	Number of flowers	Fertile capsules	Seeds per capsule (n=32)
Mean	15.7	8.5	1.21	2.66
SE	0.83	0.36	0.32	0.30
Range	11.4-33.3	6-11	1-2	1-7

opened fully in the mini-aquarium in the next weeks but, together with small capsules, they never formed fertile capsules. Ripe capsules with red spots are circumscissile (Figs. 3, 5) but they usually do not open and seeds are released only after the capsules have rotted. Ripe capsules contained on average only 2.66 ± 0.30 ripe seeds (median 2; quartiles 1 and 3; range 1-7) but each capsule always contained several abortive seeds. Dark-brown ripe seeds of a discoid shape were ca. 0.55-0.60 mm large (Fig. 4; cf. Taylor 1989), while abortive seeds were of irregular prismatic shape or very thin (i.e., without endosperm). The mean weight of one ripe seed (as based on the weight of 20 seeds) was 78.9 μ g and this value was exactly the same as that of *U. vulgaris* seed (L. Adamec, unpubl. data). If *U. minor* forms normal functional pollen in open flowers (Casper & Manitz 1975; Beretta *et al.* 2014) but only a small proportion of flowers form fertile capsules and set seeds, it may indi-



Figure 5: Ripening inflorescences of *U. minor* each with utmost two fertile capsules. Ticks indicate 1 mm.

cate that pollination is the limiting process for seed set in this species. Production of ripe seeds in flowering *U. minor* populations leads to formation of a seed bank but the production of ripe seeds within a population may not be high. However, the ecological regulation of seed germination and seed longevity are unknown.

In the newly revitalized southern pool of the sand-pit with the robust flowering *U. minor* plants, pH of the humic water was within 4.15-4.35 and was within 4.14-4.67 in other smaller pools inhabited loosely with *U. minor*. The bicarbonate concentration was thus zero and the concentration of free CO₂ could not be calculated from carbonate equilibria but probably was >0.1 mM. In line with the very low pH and absence of bicarbonate, electrical conductivity corrected for the pH in the southern pool was only 0.10-0.85 mS/m and 0.69-0.98 mS/m in the other pools. Such low conductivity values support the view that the water was very nutrient-poor. In sampled robust *U. minor* plants, >50% of mature traps contained either captured animal prey or dense suspended particles of dark-brown humic acids. In the water, low abundance of small crustacean zooplankton species from the families Daphnidae and Cyclopidae were found. Evidently, *U. minor* plants gain a dominant part of mineral nutrients N and P for their growth from zooplankton or humic acids (cf. Adamec 2018). As this pool is surrounded by a dense Scots pine forest, it is possible that also Scots pine pollen grains are randomly captured by *U. minor* traps and utilized as prey (Peroutka *et al.* 2008). Growing in dark-brown humic water, the robust flowering *U. minor* plants were only distributed within the surface water layer of 1-5 cm deep or were attached on the top of floating peaty islands (Fig. 2). Moreover, as the whole southern pool was almost unshaded by the ambient forest, the plants were growing at full irradiance and in a surface layer of warm water. The subsurface water layer is very beneficial for the growth of *U. minor* in deeper water bodies. This ecological benefit may not apply to semiterrestrial microhabitats where the attached plants can either dry out or be flooded during frequent water level fluctuations.

In conclusion, morphometric and growth traits have been specified in robust flowering plants of *U. minor* in a strongly acidic, humic forest sand-pit. Evidently, the size of robust plants and inflorescences is much larger than published in the ‘classic’ literature. As the principal ecological factors enabling the robust plant habit and prolific flowering, the following items have been suggested: high CO₂ concentration, frequent capture of prey and/or humic acids by traps, high irradiance, and warm water. This study has confirmed the eurytopic character of *U. minor* insofar as strongly acidic, well-lit, dark-brown waters represent one of several ecological optima of this species. Another optimum can be in very shallow, clear, and neutral or slightly alkaline waters.

Acknowledgements: This study was partly funded by the long-term research development project of the Czech Academy of Sciences (RVO 67985939) and the Interreg ConNat ATCZ45 project. Thanks to Jerzy Skrobek for the help with the field work.

References

- Adamec, L. 2011a. Shoot branching of the aquatic carnivorous plant *Utricularia australis* as the key process of plant growth. *Phyton* 51: 133-148.
- Adamec, L. 2011b. By which mechanism does prey capture enhance plant growth in aquatic carnivorous plants: Stimulation of shoot apex? *Fundam. Appl. Limnol.* 178: 171-176. <https://doi.org/10.1127/1863-9135/2011/0178-0171>
- Adamec, L. 2018. Ecophysiology of aquatic carnivorous plants. In: Ellison, A.M., and Adamec, L. (eds.), *Carnivorous Plants: Physiology, Ecology, and Evolution*. Oxford University Press, Oxford, U.K., 256-269. <https://doi.org/10.1093/oso/9780198779841.003.0019>

Adamec, L. 2020. Biological flora of Central Europe: *Utricularia intermedia* Hayne, *U. ochroleuca* R.W. Hartm., *U. stygia* Thor and *U. bremii* Heer ex Köl liker. Perspect. Plant Ecol. Evol. Syst. 44: e125520. <https://doi.org/10.1016/j.ppees.2020.125520>

Beretta, M., Rodondi, G., Adamec, L., and Andreis, C. 2014. Pollen morphology of European bladderworts (*Utricularia* L., Lentibulariaceae). Rev. Palaeobot. Palynol. 205: 22-30. <https://doi.org/10.1016/j.revpalbo.2014.02.009>

Casper, S.J. 1974. Familie Lentibulariaceae. In: Hegi, G. (ed.), Illustrierte Flora von Mitteleuropa, 2. Aufl., VI(I). C. Hanser, München, 506-550.

Casper, S.J., and Manitz, H. 1975. Beiträge zur Taxonomie und Chorologie der mitteleuropäischen *Utricularia*-Arten. 2. Fedd. Repert. 86: 211-232.

Fleischmann, A., and Schlauer, J. 2014. Die Gattung *Utricularia* in Bayern. Ber. Bayer. Bot. Ges. 84: 65-90.

Grulich, V. 2017. The Red List of vascular plants of the Czech Republic. Příroda (Prague) 35: 75-132.

Hofmann, K. 2001. Standortökologie und Vergesellschaftung der *Utricularia*-Arten Nordwestdeutschlands. Abhandl. Westfäl. Mus. Naturk. (Münster) 63: 1-106.

Navrátilová, J., and Navrátil, J. 2005a. Vegetation gradients in fishpond mires in relation to seasonal fluctuations in environmental factors. Preslia 77: 405-418.

Navrátilová, J., and Navrátil, J. 2005b. [Habitat requirements of some endangered and rare plants in mires of the Třeboň region.]. In Czech. Zpr. Čes. Bot. Společ. 40: 279-299.

Peroutka, M., Adlassnig, W., Volgger, M., Lendl, T., Url, W.G., and Lichtscheidl, I.K. 2008. *Utricularia*: a vegetarian carnivorous plant? Algae as prey of bladderwort in oligotrophic bogs. Plant Ecol. 199: 153-162. <https://doi.org/10.1007/s11258-008-9420-3>

Sjörs, H. 1952. On the relation between vegetation and electrolytes in north Sweden mire waters. Oikos 2: 241-258. <https://doi.org/10.2307/3564795>

Šumberová, K., Hájková, P., Chytrý, M., et al. 2011. [Marsh vegetation.]. In Czech. In: Chytrý, M. (ed.), Vegetation of the Czech Republic. 3. Aquatic and Wetland Vegetation. Academia, Prague, 385-579.

Taylor, P. 1989. The genus *Utricularia*: a taxonomic monograph. Kew Botanic Gardens, London.



Ferocious Foliage.com
Custom Tissue Culture Laboratory

Terrific alternative to a hanging basket.

Pots are 10" in diameter, 7 ¼" tall with a ~1.75 gallon capacity.

Terraces are 14 ½" tall.

info@ferociousfoliage.com

\$5.00 each + S/H

Ferocious Foliage
P.O. Box 458
Dahlonega, GA 30533



Plant not included

DROSERA FILIFORMIS RAF. VAR. *FLORIDANA* RICE
FORMA *ALBIFLORA* J.KSEPKA F. NOV

JASON KSEPKA • Farmingdale • New Jersey • USA • jasonksepka@gmail.com

Keywords: taxonomy: *Drosera filiformis* var. *floridana* forma *albiflora*.

Received: 14 December 2021

<https://doi.org/10.55360/cpn512.jk874>

Abstract: *Drosera filiformis* Raf. var. *floridana* Rice f. *albiflora* J.Ksepka, a white-flowered variant of *Drosera filiformis* with increased anthocyanin from Florida, USA, is described.

DIAGNOSIS: All parts of the plant except the corolla, stamens and pistil are red with more red coloration than the typical form. The corolla is pure white. Stamens and pistil are not different from typical form. Dormant hibernacula are also much redder than in the typical form.

TYPE: Washington County, Florida USA, 21 July 2012, J. Ksepka, Catalog #: PH00767928 deposited in Academy of Natural Sciences Herbarium, Philadelphia, Pennsylvania (PH, holotype).

On 21 July 2012, I discovered a different form of *Drosera* in Washington County, Florida. This area has been widely known as the home of the “all-red” or “Florida red” form of *Drosera filiformis*. This is now known as *Drosera filiformis* var. *floridana* (Rice *et al.* 2017). These plants are noted for their generally smaller, finer characteristics, combined with the much greater amount of anthocyanin pigments in all vegetative parts as well as growing in a very specific habitat in an extremely small range. Often growing out of pure white quartz sand, they really stand out in a crowd.

While meeting Jim Bockowski in the field on that day, I discovered a single plant growing among many that appeared typical for *D. filiformis* var. *floridana*, except that it had pure white flowers (Fig. 1). Upon closer inspection it also appeared to have more red coloration than the typical form already known to be very red. Now that I have been growing *Drosera* for a while, I have gotten into the habit of carrying glass vials to collect leaf samples for propagation. I picked a few leaves, packed them up in clean water and into my camera bag they went.



Figure 1: Comparison of flowering scapes of *Drosera filiformis* var. *floridana* f. *albiflora* (left) and *Drosera filiformis* var. *floridana* typical (right) grown in cultivation. Size is not relevant here. Note the much darker red coloration of the stem and sepals of the inflorescence of the plant on the left.



Figure 2: (A) *Drosera filiformis* var. *floridana* f. *albiflora* as found in the wild on 21 July 2012 in Washington County, Florida. (B) *Drosera filiformis* var. *floridana* typical as found growing adjacent to *D. filiformis* var. *floridana* f. *albiflora* at time of discovery.



Figure 3: (A) *Drosera filiformis* var. *floridana* f. *albiflora* emerging from dormancy in cultivation. Note the much higher levels of anthocyanins in the young foliage. (B) *Drosera filiformis* var. *floridana* typical form emerging from dormancy in cultivation. This plant is from wild material growing in the same substrate in a pot adjacent to the cultivated *D. filiformis* var. *floridana* f. *albiflora*. Note the much lower anthocyanin content of the young foliage compared to (A). This is typical of the *D. filiformis* var. *floridana* that I have observed in cultivation, and at multiple locations in the wild.

Upon growing them for several years, I was able to look more closely at this plant throughout the seasons. I was also able to reproduce this form from seed and the white flower color is stable, as is the extra red coloration. Figure 2 compares the original *Drosera filiformis* var. *floridana* f. *albiflora* with its typical neighbors in the wild. Figure 3 compares one of the cuttings from the wild plant, grown in a 10 cm pot adjacent to a cutting from a typical plant. Figure 3 was taken in the early spring as dormancy was breaking. These plants were both clones of wild plants, taken at the same time and place. They were grown in cultivation under the same soil, light, and moisture conditions.

I have named this form *Drosera filiformis* var. *floridana* f. *albiflora* to describe the most significant trait, the pure white flower. So far, these plants have reliably exhibited the extra anthocyanin as well, but I do not fully understand this trait and how/if it is related to the white flower. Further study will be needed under more carefully controlled conditions to understand what if any relationship these two traits may have.

Reference

Rice, B., Robinson, A., and Fleischmann, A. 2017. *Drosera* of North America. Page 998, in: Lowrie, A., Robinson, A., Nunn, R., Rice, B., Bourke, G., McPherson, S., Gibson, R., and Fleischmann, A. *Drosera* of the World. Vol. 2: Oceania, Asia, Europe, North America. Redfern Natural History Productions, Poole.

Cascade Carnivores

Carnivorous Plant Nursery

Mexican *Pinguicula*
- Butterworts are our specialty!

Utricularia
- Terrestrial and epiphytic

Nepenthes
- Highland species/cultivars

***Drosera*, *Dionaea*, *Drosophyllum* and more...**

Website - www.cascadecarnivores.com
Email - support@cascadecarnivores.com
Phone - 425.336.1420



Carnivorous Plant Nursery

Promoting environmental stewardship through
engaging educational materials and low-cost, high-quality carnivorous plants.



- Carnivorous Plants
- Bog Orchids, Bog Plants
- Live Wingless Fruitflies
- Activity Book for Carnivorous Plants
- Bugs in the Bog Board Game
- Free Monthly Drawing
- Online Shopping and Mail Order

www.carnivorousplantnursery.com

301-824-0133 | info@carnivorousplantnursery.com | 13763 John Cline Road, Smithsburg, MD 21783

FORKED LEAFED *DROSERA TRACYI*

BILL SCHOLL • Liberty County • Florida 32321 • USA • scholljunk@gmail.com

Keywords: sundew, *Drosera tracyi*, forked leaf.

Received: 19 July 2021

<https://doi.org/10.55360/cpn512.bs831>

Abstract: Normal *Drosera tracyi* plants occasionally produce individual leaves with slightly forked ends, (usually < 25 mm deep). Very rarely, groups of individuals may be found within otherwise normal populations that appear genetically inclined to exhibit regular and extreme forking of their leaves. Plants from seed or leaf cuttings of these carry on the trait and it appears that the trait may eventually be developed even further by selective breeding.

In the mid 1970's, I purchased my first *Drosera tracyi* Macf. (see Rice 2011 for discussion of taxonomy) and it would be the only one I would see for some time. This plant eventually produced a leaf with a "split end". At this time, I had no way of knowing that this is a fairly common occurrence with this species and thought that I had made an amazing discovery. I begged my dear mother to drive me to the other side of Richmond to the nearest hobby store to buy clear acrylic to embed it in, (and of course she did). Because of this I can say with certainty that the first forked leaf *D. tracyi* (FLT) that I ever discovered was forked 15 mm deep (Fig. 1A). I have since seen leaves with forks

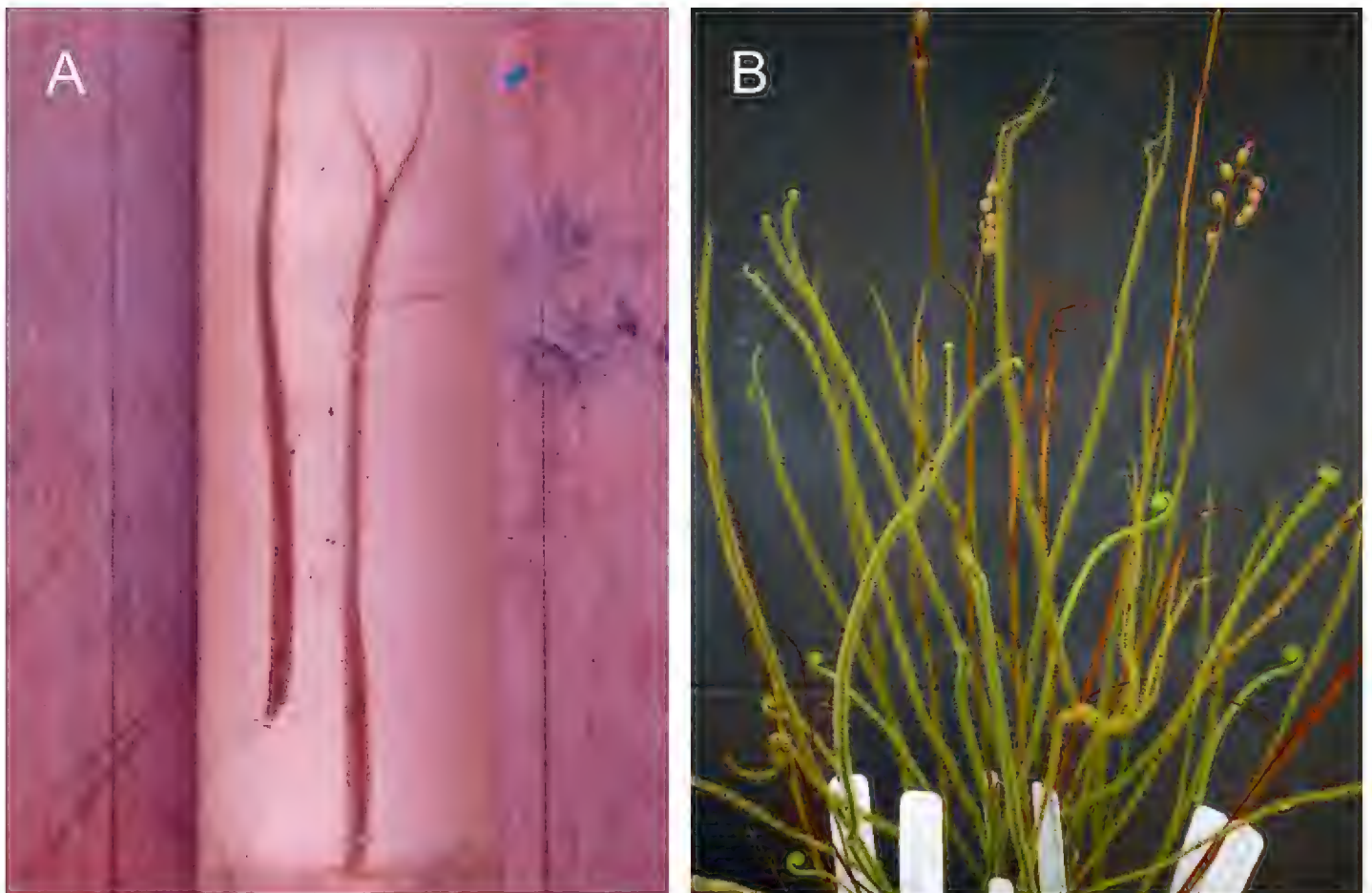


Figure 1: A) Ends of two leaves of *Drosera tracyi* embedded in acrylic in the 1970's. The leaf on the right is forked 15 mm deep. B) Potted FLT plant with nearly every leaf forked to some degree. The older, yellowing leaf to the lower right of center had forked into 6 points and bent down from the weight.

over 200 mm deep, some leaves forked into as many as seven points, and some very healthy plants with every active leaf noticeably forked (Fig. 1B).

When I began making trips to the Gulf coast, I noticed that the small split ends on individual leaves were relatively easy to find in nearly all large populations of *D. tracyi*, especially when the plants were growing vigorously. These appeared to merely be random mutations and plants propagated from seed and leaf cuttings of these seemed to be perfectly normal. Eventually I found a small group of plants growing in a very wet area of a bog in Georgia that had many leaves with small split ends. With the land owner's permission, I took some divisions and leaf cuttings. A few of the plants from leaf cuttings actually produced noticeable forks while they were still small (25-50 mm). This was very encouraging, and is still the only time I have noticed immature plants producing forked leaves. These plants however grew up to be perfectly normal, so I began to suspect some environmental factor might be the cause. While I'm sure most people who have worked with this plant have noticed the occasional split ends, I have only heard of one other person reporting a plant or plants that regularly produced forked leaves. This was Brooks Garcia, who I am told had or has a plant or plants that produce forked leaves (Aaron Calvin, pers. comm.). I have not, however, been able to contact him or find any details of his plant or plants.

In 2003, I purchased property in Liberty County, Florida and although I wasn't able to move from Virginia until 2016, I began spending a lot of time botanizing the Apalachicola National Forest and surrounding area. While I was still very interested in finding or breeding *D. tracyi* that reliably produced forked leaves, I was unable to find anything more than the occasional split ends and began doubting that I ever would.

In August of 2015, I found a colony of *D. tracyi* growing in a bog on private property that turned out to be one of the two best wild FLT sites I have seen so far (Fig. 2A). The bog is in a disturbed, grassy area maintained by mowing. I found FLT in approximately one-fourth of the bog, but by far the best examples, with the most and deepest forks, were concentrated in a much smaller area. Here I took leaf cuttings from 4 plants. One of them had 7 out of 14 leaves forked, most over 25 mm deep. One plant had 8 out of 9 leaves forked, one had 10 out of 16 leaves forked, and one had 2 of 5 healthy mature leaves split twice into 3 points on each leaf that were between 25 and 50 mm deep. Now that I was nearly certain that the trait was genetic, I again began searching for other FLT sites. I was unable until the next year to find anything more than the normal split ends, here and there, even in the large colonies of *D. tracyi* on the national forest. In May of 2016, I found another FLT bog, approximately 8 km away from the first, also on private property, outside of the national forest boundary. This bog had roughly 50-100 plants with small split ends but no plants here were forked

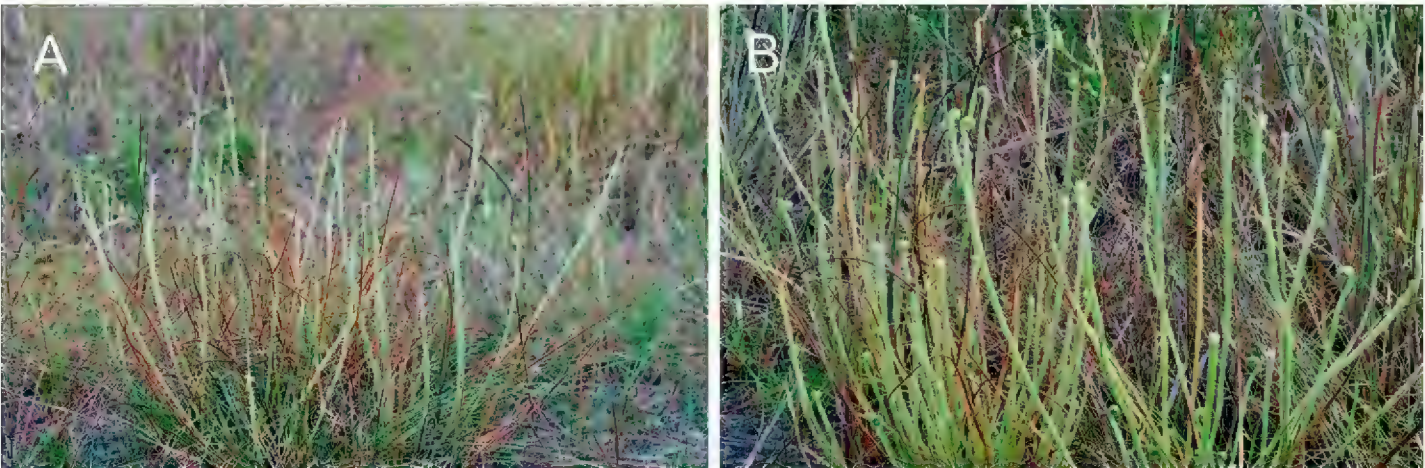


Figure 2: A) Plants propagated by leaf cuttings from the first wild FLT site, growing on author's property. B) Plants from seed of "stock" plants sown in 2019 on author's property.

deeply. I collected cuttings from only one plant that day. This bog is very similar to the first one and the FLT here are also mostly in one area. When I revisited the site a month later, I found many plants now had substantially forked leaves. I collected leaf cuttings from two of these, one with two 2-point leaves each 30 mm deep and two 3-point leaves up to 70 mm deep. The other had six of six healthy leaves noticeably forked 13 to 100 mm deep.

The plants from these cuttings, and a few others, have been further propagated both by seed and leaf cuttings to produce a large number of individuals. Most, if not all of these, reliably produce at least a few noticeably forked leaves a year. However, even the best clones vary from year to year and most of the forked leaves appear after flowering. The health and vigor of the plants seems to be the most important factor, and individuals that are seriously overcrowded in pots, infested with pests, or otherwise growing poorly tend to produce fewer and smaller forks or none at all. In the last few years, I have started 3 new colonies on my property exclusively from seed of these “stock” plants. The first of these colonies, started in 2019, produced its first few mature plants in 2020 and a reasonable number of these had at least some forked leaves. As of July 2021, this site had approximately 75 mature plants, most of these clones already had divided into multiple growth points and many had flowered. Nearly all of the mature plants had produced some noticeably forked leaves and many were producing very few non-forked leaves. A lot of leaves had forked between 100 mm and 150 mm deep, several had 3- and 4-point leaves and one leaf had 5 points (Fig. 2B). The other 2 sites, sown more recently, have no mature plants yet.

In April of 2021, a plant resulting from a cross of two of my best stock clones flowered for its first time and it produced two flowers in a row that had double ovaries with two sets of stigmas and stamens and two sets of petals (Fig. 3B). The next flower had 6 petals, instead of the normal 5, and



Figure 3: A) Pressed and dried leaves from a single specimen of FLT, while they were collected individually as they died off, all of these leaves were active at the same time. B) Flower with doubled ovary, stigmas, stamens, and petals.

the other flowers were all normal. I don't know if this has anything to do with the forked leaf trait, or is just a coincidence, but I think it is interesting nonetheless.

It seems almost certain that the forked leaf trait in *D. tracyi* is genetic and can at least to some extent be enhanced by selective breeding since my colony started from seed of FLT's pollinated by other FLT's has a much higher percentage of forked leaved plants than the wild sites. I still have to emphasize the facts that even the best clones do not produce all forked leaves, and vary from year to year, also anything causing these plants to grow poorly seems to cause them to produce mostly or all normal leaves. Indeed, my potted stock plants, having not been weeded or repotted for 2 or 3 years, and growing under shade, are now producing only a few small split ends. I now intend to continue breeding the better clones with the hope of developing more dependable and possibly more extreme ones.

Acknowledgements: I thank Stephen Williams for his suggestions and extensive help with the manuscript.

References

Rice, B.A. 2011. The thread-leaved sundews *Drosera filiformis* and *Drosera tracyi*. Carniv. Pl. Newsl. 40(1):4-16. <https://doi.org/10.55360/cpn401.br119>

California Carnivores

Largest & oldest CP nursery in the US - Pioneering the hobby since 1989
Founded by Peter D'Amato, author of "The Savage Garden"
Shipping the highest quality plants to the entire U.S.
www.californiacarnivores.com



PURPLE BLADDERWORTS IN QUEBEC: REDISCOVERING AN UNUSUAL GROWTH STRATEGY

DOUGLAS W. DARNOWSKI • Department of Biology • Indiana University Southeast • New Albany
• Indiana 47112 • USA • ddarnows@ius.edu

Keywords: bladderwort, *Utricularia*, deep, Quebec, Canada.

Received: 16 July 2021

<https://doi.org/10.55360/cpn512.dd112>

Introduction

This report describes the discovery of plants of the purple bladderwort, *Utricularia purpurea*, growing at surprising depths in a lake near Montreal, Quebec, Canada. While *U. purpurea* normally grows floating close to the surface in bright light, these plants were found affixed to the bottom of an inlet on a large lake in Quebec, growing in dim light in humic water up to 3-4 meters below the surface. This phenomenon has been seen before in the northern United States, reported in one paper from the literature from the early 1980's, so it seems worthwhile reviewing this interesting phenomenon, first by describing what was found and then by connecting to the one report in the literature (Moeller 1980).

Materials and methods

All plants were observed on site using field equipment such as a field light microscope. Depths were measured using a string, pulled to the bottom of the lake at various points, tied to a float which was then measured using a tape measure.

While travelling in Quebec during July, 2018, I visited a camp on Lac Maskinonge in Mandeville, Quebec, Canada, about one hour of travel from the city of Montreal. The lake is a large glacial lake of about 1100 hectares (source: Wikipedia entry on Lac Maskinonge, accessed 15 September 2018).

The camp includes a small sand beach on a natural hook-shaped inlet (Fig. 1, arrow). The inlet starts on its west with a depth of a few centimeters and proceeds eastward/southeastward to reach more than 5 meters in depth.

There is a small oval pond about 3 by 5 meters at the south western edge of the inlet which is no more than 70 cm in depth, sheltered from waves and separated from the inlet by about one meter. In July of both 2016 and 2018, the pond contained large, healthy plants of *Utricularia macrorhiza* in full bloom. Based on this, and the presence of a few plants of *U. macrorhiza* near the shore in the inlet, I expected to find more species of *Utricularia*, but was surprised to find no others near the surface, especially at the western end of the inlet.

This shallow, western portion of the inlet contains a range of typical emergent aquatic plants from eastern North America as well as floating genera, mostly from the Waterlily Family, such as *Nymphaea*, *Brasenia*, and *Nuphar*.

Underwater and proceeding eastward, once the water reaches a depth of 30-60 cm, one finds a carpet of a giant-celled stonewort alga, probably *Nitella*, which continues abundant to a depth of about 120 cm.

At that point, the *Nitella* becomes much more sparse, along with other vegetation, and the dominant plant becomes *Utricularia purpurea*, which can be found down to a depth of 3-4 m. The area containing these carnivores is centered on the area where a floating dock/diving platform is anchored. These plants were growing affixed loosely to the substrate, along with a few plants of *U. macrorhiza*, similarly submerged and affixed.



Figure 1: Map of the site at which *Utricularia purpurea* was growing up to 3-4 m below the surface. The nearest town, St. Gabriel-de-Brandon, Quebec, Canada, is shown, and the site is indicated by an arrow. Map created at snazzymaps.com using Google Maps data.

Examination of submerged plants of *Utricularia purpurea* showed little or no prey captured.

The lake, and especially the inlet in question, has very clean water as seen in the abundance of large freshwater mussels as well as sponges, including *Spongilla lacustris* and *Ephydatia fluviatilis*.

Discussion

The discovery of this population extends the description of this phenomenon to a second country in North America. Further work is needed to determine the answers to several questions:

- Just how far north does *U. purpurea* grow in this way?
- Are these plants sufficiently different from more typically floating plants of *U. purpurea* to merit description as a new species?
- What are the rates of prey capture and various key metabolic processes (photosynthesis, photorespiration, etc.) in these plants and how does this relate to both submerged and floating plants of *U. macrorhiza* at the same site?
- How do these plants remain submerged?

Acknowledgements: The authors thank Indiana University Southeast for Student Assistant Grants and Research Support Grants. No permits were needed for this work as plants were observed on site using field equipment and returned to their habitat.

References

Moeller, R.E. 1980. The temperature-determined growing season of a submerged hydrophyte: tissue chemistry and biomass turnover of *Utricularia purpurea*. *Freshwat. Biol.* (10): 391-400. <https://doi.org/10.1111/j.1365-2427.1980.tb01214.x>

FIELD NOTES ON *TRIANTHA OCCIDENTALIS* SUBSP. *BREVISTYLA* (C.L.HITCHC.) PACKER IN WASHINGTON, USA

BARRY A. RICE • Center for Plant Diversity • University of California • One Shields Avenue • Davis
• California • USA • brice@sierracollege.edu

Keywords: Field notes: *Triantha occidentalis* subsp. *brevistyla*.

Received: 28 March 2021

<https://doi.org/10.55360/cpn512.br397>

Introduction, Taxonomy, and Ranges

Lin *et al.* (2021) argue that *Triantha occidentalis* may be carnivorous. To report their results to the readership of Carnivorous Plant Newsletter, I wrote a short introduction to the genus *Triantha* (Rice 2021). As I wrote that paper, I reflected upon how the work by Lin *et al.* (2021) emphasized the more northerly subspecies, *Triantha occidentalis* subsp. *brevistyla*, but I had only ever seen the more southerly *Triantha occidentalis* subsp. *occidentalis*.

Accordingly, when my wife mentioned that she wanted to travel north to Washington state to attend an artists' workshop, I quickly affirmed my interest in joining her on the trip. I did not intend to learn a new artistic technique—I had my own plans which were centered upon *Triantha occidentalis* subsp. *brevistyla*. And after reviewing my notes and conversations with Kris Hardy (in Washington), I had a full slate of sites to visit. Here I'm going to describe a little of what I saw on two of those days in the field.

King and Kittitas Counties

I visited Washington in September—late season. The first day was spent visiting sites straddling the border of King and Kittitas Counties, at an elevation of about 1100-1200 meters. At this altitude I was up in the clouds—the air was heavy with fog that limited vision and deadened sound, and occasionally transformed into a light, drizzling rain. Everything was wet, wet, wet.

The region consisted of a complicated matrix of habitat types—mixed conifer forest, shrubland, open glades, and the occasional body of water. My goal was to reach a set of wetland clearings where I hoped to find *Triantha*.

I was still driving the dirt roads to my first destination when I encountered a nice roadside population of *Pinguicula macroceras* growing on wet rock. A cute little carnivorous plant site, and I hadn't even reached my destination yet! I knew it was going to be a good day.

Kris Hardy (pers. comm. 2019, 2021) told me he suspects that some of the populations of *Pinguicula* near the ones I saw might be *Pinguicula vulgaris*. It would be interesting to revisit the area when they were in flower, but that would have to wait for another trip.

Parking my car on the edge of the dirt road in Kittitas County, the first site was a pond that was an easy push through about 50 meters of dense shrub. The shrubs were graciously free of spines, but by the time I emerged at the water's edge I was drenched with water from the rain-sodden foliage. The pond surface was dotted with leaves of *Menyanthes trifoliata*, which is a great indicator for an intact clean habitat. Even so, I was unable to find any *Utricularia* in the pond.

The shoreline of the pond was dominated by *Sphagnum* and monocots, as well as plentiful *Drosera anglica* (a short leaf blade form). I was gratified to see plenty of *Triantha occidentalis* in fruit on the margins of the pond, growing in the same sphagnumous habitat as the *Drosera* (Fig. 1a). Each plant



Figure 1: (a) *Triantha occidentalis* subsp. *brevistyla* in Kittitas County (Washington). Late season, the leaves are starting to yellow and the fruit are bleached. (b) A bleached inflorescence. Notice that the flowers (now fruit) are grouped in threes; hence the genus name *Triantha*. (c) An old senescing inflorescence in Kittitas County, retaining small bits of detritus on the glandular scape.

consisted of a flat spray of 3-5 leaves about 15 cm tall, and the leaves were starting to yellow at the tips. The *Triantha* was in fruit, and I was surprised to see that the fruit color ranged from cream to bone white (Fig. 1b). Since *Triantha* fruit are usually bright red, these fruit were very old and becoming bleached from the elements. Searching the area, I found some plants with fresher fruit that had a clear red flush. Even though the fruit were so old, the inflorescence axes were covered with gummy glands, making the plants very sticky to the touch. Under close examination I saw the stems had bits of small detritus adhering to the glands, but which appeared to be dried plant matter (Fig. 1c).

I travelled on foot from this site a short distance into King County, to investigate another nearby *Drosera* site. This site was different in character and I was curious if *Triantha* might be found in this habitat. Instead of being a sphagnum lake margin, it was a large sloping clearing in a forest that followed a meandering, braided stream, which had carved itself a small gully in the clearing. *Drosera anglica* grew in the stream flow gully. Since *Drosera anglica* can't resist active stream flows, this region must not be subjected to much seasonal flow variation (the site is fairly close to the top of the watershed). *Triantha* occurred throughout the habitat, usually in slightly higher and drier conditions. In general, the *Triantha* was less picky about acceptable habitat as was *Drosera anglica*. Here, as before, the fruit was bleached white. Breaking open some of the fruit, I examined the seeds. They were slightly less than 1 mm long, ovoid, orange, and each was contained in a tiny, white, baglike structure.

Frustratingly, in later conversations with Kris Hardy, I discovered I was only about 100 m from one of the putative *Pinguicula vulgaris* populations! Reasons for another trip in the future!

Whatcom County

With another day on my hands, I opted to drive to the northern edge of Washington, to explore the region near Mt. Baker and Mt. Shuksan. This is a spectacular area with scattered lakes,



Figure 2: A lovely riparian habitat with *Triantha* and other plants in Whatcom County.

scree slopes, snow fields, and glaciers (the glaciers on Mt. Baker are among the only ones in the USA that are not receding because of climate change). I had data for several *Pinguicula* sites, some of which would require some effort to reach, and I was looking forward to the challenge. I also had data on nearby *Triantha* sites, but since the *Triantha* plants I had seen on my earlier



Figure 3: (a, b) *Triantha* peduncles at a riparian site with captured insects. (c) Bright, red fruit. (d) Peduncle from plants at the base of a wet cliff wall.

trip were past their prime, they were lower priority.

Parking my car, I began my hike. The flora was marvelously unfamiliar to me, and my progress was slow as I photographed my way through the alpine habitats. A stream crossing at about 1300 m was particularly beautiful, rich with *Parnassia fimbriata*, *Platanthera stricta*, and *Veratrum viride*, all of which were new to me on this trip. As I photographed my way along the stream, I was delighted to find *Triantha occidentalis* (Fig. 2). Clearly this site was a little earlier in the season (the elevation was slightly higher than the sites in King County and Kittitas County). The peduncles were still fresh and green, and with some care I was able to photograph the many captured insects and bright red fruit (Fig. 3a, b, c). These plants were growing in the saturated, mucky soils on the very edge of the riparian habitats. No *Drosera* or *Pinguicula* were visible—this was not a surprise to me, since the stream was probably subject to stronger flows during periods of snowmelt; *Drosera anglica* and *Pinguicula* usually are too weakly rooted to withstand such seasonal flows. In contrast, the *Triantha* was firmly affixed to the soil.

Hiking further, I approached a sheer, south-facing rock wall with water dribbling over its surface. Peering through my binoculars, I could see *Pinguicula* high on the cliff face. I traced the flow of water down the rock face, down to the cliff base, which was fortunately easily accessible. And there, as expected, I found large colonies of *Pinguicula*. It was quite close to the trail, and while I could see people had been knocking plants off the rock face (probably more by accident than plant poaching), there was plenty of seedling activity. Interestingly, the *Triantha* was able to survive in tiny pockets on the wet rock cliff, just like the *Pinguicula* (Fig. 4). Here, as before, the *Triantha* inflorescences were capturing many tiny insects (Fig. 3d). A close look at the *Pinguicula* leaves showed that they were capturing the same type of insect (Fig. 5)! As before, wherever the ground was permanently moist, I also found *Triantha*, with fruit ranging from bright red to bleached (Fig. 6).

Overall, this was a delightful and enlightening trip. It was fascinating to observe how closely the classically recognized carnivorous plants (*Drosera anglica* and *Pinguicula macroceras*) were associated with *Triantha*. Meanwhile, *Triantha* can resist being dislodged by seasonal high water flow, so can persist in places that would be otherwise suitable for weakly rooted *Drosera* and *Pinguicula*.

For those seeking more media from these days in the field, I have posted a twelve-minute *Triantha* video on my YouTube channel (<https://www.youtube.com/watch?v=eiX9SqY1PRI>).



Figure 4: *Triantha* growing on a sheer, wet rock wall with *Pinguicula macroceras*.



Figure 5: Close view of insects captured by *Pinguicula macroceras*.



Figure 6: *Triantha occidentalis* subsp. *brevistyla* fruit in various shades of bleaching, growing with *Pinguicula macroceras* and *Parnassia fimbriata*.

References

Lin, Q., Ané, C., Givnish, T.J., and Graham, S.W. 2021. A new carnivorous plant lineage (*Triantha*) with a unique sticky-inflorescence trap. PNAS August 17, 2021 118 (33) e2022724118. <https://doi.org/10.1073/pnas.2022724118>. Accessed 25 August 2021.

Rice, B.A. 2021. A short profile on *Triantha* (Nutt.) Baker with a focus on *T. occidentalis* (S. Watson) R.R. Gates. Carniv. Pl. Newslett. 50(4): 218-222. <https://doi.org/10.55360/cpn504.br232>

CAPTIVATED: THE ALLURE OF CARNIVOROUS PLANTS

A NON-PROFIT DOCUMENTARY FILM

JONATHAN S. KUI • New York City • New York • USA • mail@captivatedthefilm.com

Keywords: education, documentary film, carnivorous plants.

Received: 26 February 2022

<https://doi.org/10.55360/cpn512.jk295>

I'm a forensic biologist, amateur filmmaker and the owner of a registered carnivorous plant nursery in New York City. In 2015, I decided that my next film project would be a documentary, merging my passion for filmmaking with my love of carnivorous plants. However, other previous documentary films had already covered the topic of carnivorous plants, often with impressive time-lapse and macro photography, which I had neither the equipment nor training to execute. I therefore decided that my different approach would be a human-interest film focusing on the effects of carnivorous plant cultivation on the life of the grower. Educational segments showcasing different carnivorous plant types would function as interludes within the film.

Pre-Production

For reasons of practicality, I needed to focus on subjects who were within a reasonable travel distance of me. I also wanted to invite subjects whose experiences with carnivorous plants would represent a unique aspect of the human condition. Eric Kunz is the owner of Seemore Carnivorous Gardens in St. James, New York, whose entire livelihood is dependent upon selling these unique plants. Matthew Kaelin is an author of the carnivorous plant art photography book, *The Sinister Beauty of Carnivorous Plants*, whose works I had seen at a gallery exhibition in Brooklyn several years earlier. Jonathan Mejia is the creator of The Sarracenia Forum, an online information source and discussion group for both novices and notable growers in the community. Iván Lacroix was, at the time, a teenager whose passion for carnivorous plants was inspiring, and whose knowledge base was very impressive for his age. My intent was for each of them to represent Livelihood, Art, Community, and Discovery, respectively. I was grateful when each of accepted my invitation to participate in what was, at that time, a for-profit project.



Figure 1: Poster used for film promotion.

To secure funding for the film project, I turned to Kickstarter, a popular online crowd-funding platform. I filmed a five-minute pitch reel to introduce the film’s concept to prospective backers, primarily using footage and photos that I had shot, as well as a few photos submitted by each of the four subjects to introduce themselves. I projected costs for camera, sound and lighting equipment, gear, and travel, and used that figure as the funding target for the campaign.

The campaign launched on 30 October 2015, and concluded on 29 November, meeting its funding goal with the assistance of 26 backers.



Figure 2: Matthew Kaelin photographing a field of *Drosera filiformis* in their native habitat on Long Island.

Production

Principal photography began on 7 February 2016, using a Canon Vixia HF G20. Footage was captured in 1080p, at 24 fps saved in a 29.97 fps container (“Canon Cinema 24fps”). I followed each of the subjects intermittently throughout 2016, attempting to divide the film into Winter, Spring, Summer, and Autumn periods, with one interview day and one “event” day, per person, per season. Eric’s coverage was primarily at his place of business in St. James, with location shoots at educational events in Suffolk County, New York and a street fair in Nyack, New York. As an expert in the native carnivorous plants of Long Island, Matthew brought us to habitats in Manorville, New York and the Hamptons, where we were able to film several species of *Drosera*, *Utricularia*, and *Sarracenia* in the wild. Jonathan’s coverage was in Manhattan and at Brooklyn Botanic Garden. Iván’s coverage brought us to Governor’s Island, New York and Ithaca, New York, where we were graciously treated to a tour of Ryan Georgia’s nursery. Thanks to the New England Carnivorous Plant Society, we were graciously given permission to film Jonathan and Iván on a trip to the 2016 New England Carnivorous Plant Show, where they met Matthew for the first time, after his presentation on his art photography book.

In addition to the documentary subjects, I was also grateful to the New York Hall of Science, Brooklyn Botanic Garden, Queens Botanical Garden, and the Brooklyn Public Library for allowing me to in-



Figure 3: Ryan Georgia, of Native Exotics nursery, gives a greenhouse tour to Iván Lacroix.

interview staff members, with several of whom I had previously worked in my capacity as a carnivorous plant nursery owner. This interview footage was used to assemble a coda segment that briefly explored the role that carnivorous plants can play in society.

Principal photography concluded on 14 December 2016, with nearly 1600 different shots captured. Additional pickup shots, primarily of plants, continued to be filmed intermittently through 2020 as editing needs arose, using a Canon PowerShot SX520 HS.

Post-Production

This was both my first unscripted film and my first feature-length film. Compared to the short films on which I had previously worked, I was unprepared for how long the post-production process would take on a film of this nature. Assembly of the rough cut began in January 2017, in Adobe Premiere Pro CS6. Transcription of all 10 hours of interview footage was completed near the end of that year. A 2½-minute trailer was assembled and released on YouTube on 30 December 2017, while editing the documentary continued.

In May 2018, I received a message from a third party that expressed concerns about an image submitted by one of the subjects, which had been used in the Kickstarter pitch video. The third party was concerned about the use of the image (which featured their property) as no permission had been obtained for its use. This was, of course, a misunderstanding on my part, as I was not aware of their involvement in the submitted image until they contacted me, and it was resolved very amicably through discussion and subsequent attribution in the final film credits. However, with uncertainty as to whether there could exist other potential unknowns that could expose me to personal liability, I took a six-month hiatus from post-production to decide whether or not this project should continue. In the end, my passion to tell this story led me to the decision to continue, announcing on 26 March 2019 that the project was shifting from a for-profit project to a freely-distributed non-profit film, to manage risk.

The rough edit was completed on 24 March 2020. A film score was composed remotely in April 2020 by a previous collaborator of mine, Greek Cypriot composer Adonis Aletras. Full voiceover narration was provided by Kristyl Cuenca-Sisko in January 2021. Final post-production fixes (focus, color correction, sound levels, etc.) were completed on 11 May 2021, with the final film having a running time of 79 minutes.

Release

The film was uploaded to FilmFreeway for submission to film festivals in May 2021. By March 2022, the film had screened at five festivals and the 2021 New England Carnivorous Plant Society Show. It won three awards

- Best Documentary Feature at Festopedia Cinemas and Scripts, Mohali, India
- Best Documentary Film at Mabig Film Festival, Augsburg, Germany
- Best Science Film at GeekFest, Toronto, Canada

and is listed on IMDB (<https://www.imdb.com/title/tt14636936/reference>). On 1 March 2022, the film was released for free public screening on YouTube and FilmFreeway, and is now available for wide public viewing.

To view the film, and for more information including direct viewing links, please visit <http://www.captivatedthefilm.com>.

NEW CULTIVARS

Keywords: cultivar, *Dionaea* ‘CCCP Orca’, *Dionaea muscipula* ‘Schup Destruction’, *Sarracenia* ‘Chaos’, *Sarracenia* ‘Crown of Thorns’, *Sarracenia* ‘Defiance’, *Sarracenia* ‘Dragon Queen’, *Sarracenia* ‘Lion’s Mane’, *Sarracenia* ‘Mediterranean Sunrise’, *Sarracenia* ‘Paradox’, *Sarracenia* ‘Pink Champagne’, *Sarracenia* ‘Ring of Fire’, *Sarracenia* ‘Sally Gipple’, *Sarracenia* ‘Thelma’s Lantern’, *Sarracenia leucophylla* ‘Wilkerson’s Red Rocket’.

<https://doi.org/10.55360/cpn512.cr512>

Abstract: Fourteen new carnivorous plant cultivars are named and described: *Dionaea* ‘CCCP Orca’, *Dionaea muscipula* ‘Schup Destruction’, *Sarracenia* ‘Chaos’, *Sarracenia* ‘Crown of Thorns’, *Sarracenia* ‘Defiance’, *Sarracenia* ‘Dragon Queen’, *Sarracenia* ‘Lion’s Mane’, *Sarracenia* ‘Mediterranean Sunrise’, *Sarracenia* ‘Paradox’, *Sarracenia* ‘Pink Champagne’, *Sarracenia* ‘Ring of Fire’, *Sarracenia* ‘Sally Gipple’, *Sarracenia* ‘Thelma’s Lantern’, *Sarracenia leucophylla* ‘Wilkerson’s Red Rocket’.

Dionaea muscipula ‘Schup Destruction’

Submitted: 16 July 2021

Dionaea muscipula ‘Schup Destruction’ (Fig. 1) was discovered by Valerio Guidolin from Diflora. This cultivar came from seed from an open pollinated *D.* ‘Schuppenstiel II’ by V.G. years ago.

From numerous seeds collected by V.G., germinated in vitro, and grown in soil, only one plant showed significant differences from other plants, indeed it shows the same features of *D.* ‘Schuppenstiel II’ but having more pronounced crested leaves. The traps also show the same “crested like” appearance as the leaves.

The significant difference from *D.* ‘Schuppenstiel II’ is the inhomogenous variegated colour of the traps, with deep red and deep green spots in the inner and outer sides and also shorter cilia.

The name “schup destruction” was selected by the phenotypes that this unique plant shows because “schupp” remembers the original cultivar it came from and “destruction” just because the weird appearance of this unique cultivar.

Dionaea muscipula ‘Schup Destruction’ is a unique cultivar that must only be propagated by leaf/floral or rhizome cuttings to preserve the phenotype.

—GIACOMO MEHLE • via Zellina 7 • 35135 Padua • Italy • giacomo.mehle@gmail.com

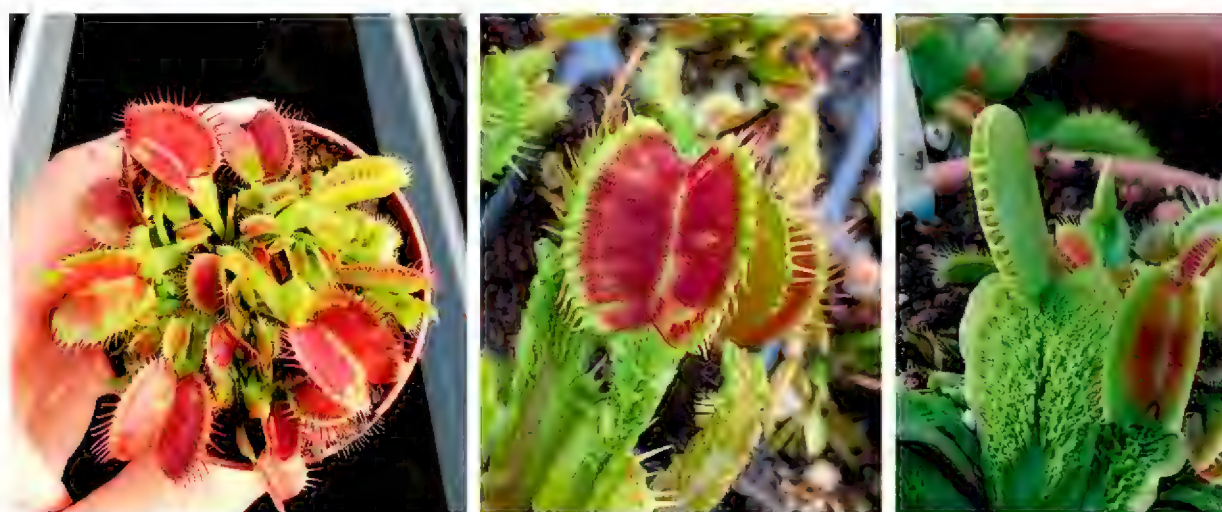


Figure 1: *Dionaea muscipula* ‘Schup Destruction’

Dionaea ‘CCCP Orca’

Submitted: 7 October 2021

Dionaea ‘CCCP Orca’ (Fig. 2), grown by Craig Heath, was selected in January 2020 from seedlings grown from *Dionaea* ‘Whale’ seeds.

Dionaea ‘CCCP Orca’ differs from *Dionaea* ‘Whale’ by short wavy uneven pitchfork cilia teeth, lime green bold rim color lining producing bright ruby color traps slightly red at the tips, 3 dark noticeable trigger hairs on each side of the traps which are fully functional to completely seal to digest insects. Outside of trap has curvature bleeding red markings. Producing traps 2.5 cm long, 1.3 cm tall. A straight slight red blood line reaches down to the lime green petioles, which measures 1.6 cm wide and 2.5 cm long, growing in a rosette style. The plant is a fast grower produces red traps during the growing season.

Dionaea ‘CCCP Orca’ was named for its wavy trap form. The name Orca or killer whale is a toothed whale belonging to the oceanic dolphin family. CCCP is the abbreviation for Crazy Craig’s Carnivorous Plants.

Dionaea ‘CCCP Orca’ must only be propagated vegetatively to preserve the unique characteristic of this cultivar.

—CRAIG HEATH • Crazy Craig’s Carnivorous Plants • Lorton • Virginia • USA • craigisterh@msn.com



Figure 2: *Dionaea* ‘CCCP Orca’.

Sarracenia leucophylla ‘Wilkerson’s Red Rocket’

Received: 5 January 2022

Sarracenia leucophylla ‘Wilkerson’s Red Rocket’ (Fig. 3 & front cover) was discovered on Bud Wilkerson’s property in Walton County, Florida by Brooks Garcia. With permission, Brooks obtained a division of the plant. He coined the name ‘Wilkerson’s Red Rocket’ to honor the landowner and reference the visual splendor of the plant. It is a superior, select clone that is remarkable for a number of reasons. Unlike many clones of *S. leucophylla*, ‘Wilkerson’s Red Rocket’ produces a robust crop of spring leaves. In the fall, it consistently produces an exceptionally tall crop of leaves that can grow upwards of 92 cm.

Sarracenia leucophylla ‘Wilkerson’s Red Rocket’ is one of the most sought-after clones of *S. leucophylla* due to its exceptional color, shape, and vigor. It is one of the deepest red *S. leucophylla* in cultivation. The upper third of the leaves are solid red, transitioning to red-veined white on top. The dramatic red areas mature to a ruby color, often with a striking pink lip. The throat is predominantly white, owing to the thinner red venation in that area. The lower two thirds of the leaves are green. In addition to their outstanding color, the leaves are remarkably large and well-shaped. Notably, the lip has a significant downward slant with an up-turned lid.

—KIRK SIMPSON • Atlanta Carnivorous Gardens • Snellville • Georgia • USA • kirkauburn@gmail.com

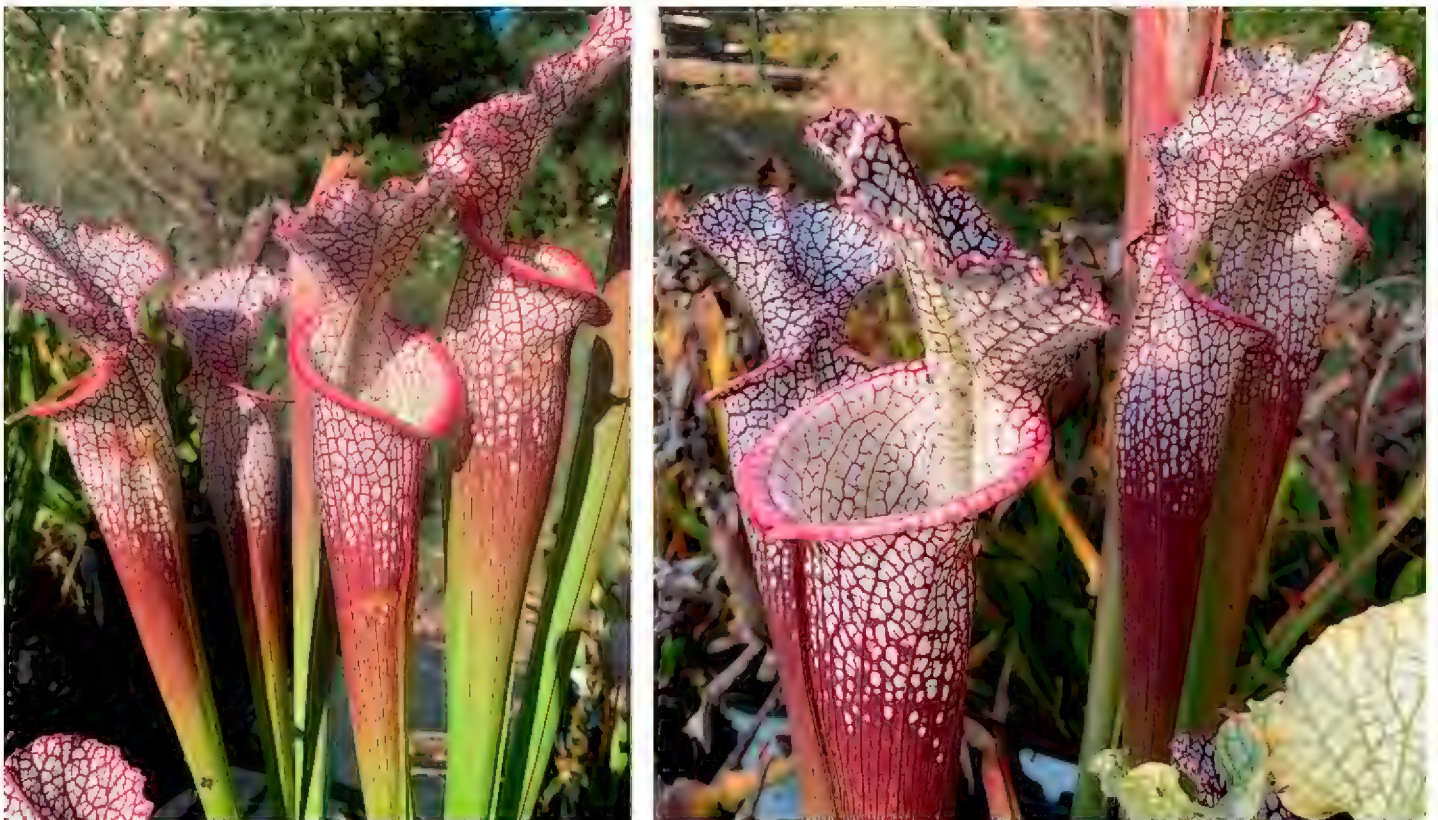


Figure 3: *Sarracenia leucophylla* ‘Wilkerson’s Red Rocket’.

Submitted: 9 December 2021

Sarracenia ‘Sally Gipple’ (Fig. 4) is a cultivar notable for its unique cascading lid, its intriguing pastel coloration, and for its sweetly scented pitchers. *Sarracenia* ‘Sally Gipple’ is a direct offspring of the famous *Sarracenia* ‘Reptilian Rose’ cultivar, and it maintains and highlights many of the same agreeable traits as its parent. The name of this new cultivar was chosen to honor the life of Mrs. Sally Gipple of Newport Beach, California. This cultivars’ understated excellence and regal warmth call to mind Sally’s own spirit, and it is the author’s hope to passingly highlight the impact both she and her loving husband Rich Gipple had on my own life, plants, and family.

Sarracenia ‘Sally Gipple’ was originally procured from one of the popular carnivorous plant internet-forums in the “pre-Facebook” era of social media. *Sarracenia* ‘Sally Gipple’ was sold to me as a seedling labeled “*S. leuco* “pale” × (× ‘Reptilian Rose’). Unfortunately details of the exact sale and records of the original breeder were lost to time. However, roughly 18 months after my purchase, the plant began displaying mature traits and developing an impressive, wildly unique lid form. By the time the plant first flowered, it was obvious that the clone was worthy of recognition and cultivar status.

Sarracenia ‘Sally Gipple’ typically produces pitchers from 40-60 cm at maturity, though seldom produced “giant” pitchers sometimes top 75 cm tall. Spring pitchers are typically smaller and more green-colored than fall pitchers. Fall pitchers tend to develop more color, larger sizes, and a more dramatic lid. The color palette of *S. ‘Sally Gipple’* is intriguingly pastel—muted pinks, whites, greens, and intergrades abound on the upper third of spring pitchers. In fall, pitchers suffuse with dark purple-red and last well into the late autumn, similar to its *S. leucophylla* “father”. The large lid of this cultivar is a variable trait from pitcher to pitcher, with large variances in lid angles displayed (Fig. 4). Often pitchers held at the same time will sport lids held at different angles than one another—no two are exactly identical. The lid generally cascades below the mouth, but pitchers with more traditional, horizontally held lids are produced as well—especially in the spring. The cascading lid form must be considered the best and most desirable style of pitcher produced by *S. ‘Sally Gipple’* and makes up 50-60% of pitchers produced annually under ideal conditions.

To maintain the desired cultivar traits, all propagation of *S. ‘Sally Gipple’* must be done asexually via division or tissue culture.

—FRANK OBREGON • Long Beach • California • USA • fobregon@descansogardens.org



Figure 4: The variable lid angle of *Sarracenia* ‘Sally Gipple’ pitchers.

Submitted: 9 December 2021

Sarracenia ‘Ring of Fire’ (Fig. 5) is a cultivar of *Sarracenia* pitcher plant notable for its fiery red-orange foliage coloration, large pitcher size, and notable clumping vigor. These traits combine to make a spectacular and unique specimen plant worthy of being preserved and grown into the future. The name ‘Ring of Fire’ calls attention to the clone’s intensely red peristome and wavy, flame-like orange lid, while also paying homage to the Pacific Ocean’s “Ring of Fire”. The Pacific “Ring of Fire” is a powerful geologic structure responsible for countless lava flows, earthquakes, and which is present underneath the city the author/breeder calls home.

Upon maturing and flowering for the first time, it became obvious to me that this clone was cultivar-worthy. After spreading it around to other growers throughout California and getting positive feedback, I decided to establish the cultivar name *S. ‘Ring of Fire’* for it. *Sarracenia* ‘Ring of Fire’ is an obvious and outstanding cultivar produced and selected by the author in 2011 after hybridizing *S. ‘Leah Wilkerson’* with pollen from (*S. leucophylla* (red) × *S. flava* (red)). *Sarracenia* ‘Ring of Fire’ takes much of its overall shape from *S. ‘Leah Wilkerson’*, including a slight bulge on the back/near the “throat” of mature pitchers.

Mature pitchers of *S. ‘Ring of Fire’* are smaller (average 70 cm; maximum 100 cm) than *S. ‘Leah Wilkerson’* (average 92 cm; maximum 130 cm). Compared to ‘Leah Wilkerson’, ‘Ring of Fire’ spring pitchers are larger and more numerous in spring, while fall pitchers are fewer and smaller. ‘Ring of Fire’ pitchers have a yellow-orange body, the upper 1/3 is dark orange to red with the darkest color in/around peristome; dark red veining is present in entire pitcher body; pitchers often become wholly red, like *S. flava* var. *atropurpurea*; lid is orange-to-red with dark red veining. In comparison, ‘Leah Wilkerson’ pitchers have a lime green body, the upper 1/4 is yellow-white with large *S. leucophylla*-like areoles and a light red veining; the lid is pale yellow to white with strong red veining.

Prior to being given a cultivar name, the specimen was exchanged as “*S. × LWLRFR Cln 1*”.

—FRANK OBREGON • Long Beach • California • USA • fobregon@descansogardens.org



Figure 5: *Sarracenia* ‘Ring of Fire’ spring (left) and fall (right) pitchers.

Sarracenia 'Dragon Queen'

Received: 24 December 2021

Sarracenia 'Dragon Queen' (Fig. 6) is the result of hybridization work done by Wes Buckner in 2014. It came to us in a group of young seedlings. Its parentage is (*S. flava* var. *rubricorpora* × *S. leucophylla* 'Wilkerson's Red Rocket') × *S. 'Kilimanjaro'*.

The exceptional qualities of this flamboyant plant were immediately apparent. The large, colorful *S. × moorei* genetics are combined with the abnormally fast, clumping growth habit of *S. 'Kilimanjaro'*. In the spring, the plant produces an abundance of sturdy, erect 70-cm-tall oxide red leaves. The two-tone lids are pastel yellow infused with dramatic oxide red venation. The fall crop of leaves is equally as profuse and is red, infused with pink. The pastel yellow areas on the lid are smaller in the fall.

Sarracenia 'Dragon Queen' should be propagated through vegetative means.

—JOSH LYNCH • Flytrap King Nursery • Leicester • North Carolina • USA • joshlynch@gmail.com



Figure 6: *Sarracenia* 'Dragon Queen'.

Submitted: 2 March 2022

Sarracenia ‘Chaos’ (Fig. 7) originated from a cross by Travis H. Wyman in 2008. The parentage is *S.* ‘Reptilian Rose’ × (*S. flava* var. *rubricorpora* × *S. leucophylla*) and was previously released as clone #15 from this seed set. Seed was sent to me in September of that year. This clone is a sibling to *S.* ‘Crown of Thorns’, *S.* ‘Defiance’, and *S.* ‘Pink Champagne.’

This is an incredible plant. It is similar in form to its *S.* ‘Reptilian Rose’ parent with the crenulated nectar roll, but has a more open pitcher structure and boasts a brighter early season color scheme. Early in the season, the plant sends up towering pitchers that start off suffused in rich rusty/red hues. The wide ruffled hood starts the season off in bright yellowish tones, laced with contrasting dark veins that emanate up from the pitcher body. As the season progresses, the traps darken to a deep red-black. These characteristics give the plant an ominous and chaotic appearance, hence the name *Sarracenia* ‘Chaos’ which I coined in 2015.

Mature pitchers average roughly 60-76 cm in height, although larger pitchers have been observed. The largest traps are produced early in the season with a less robust set in the late season. Flowers are yellow with a light green hue.

To maintain these distinctive characteristics, propagation must be done only by division.

—ROBERT Co • Oregon • USA • rob@thepitcherplantproject.com

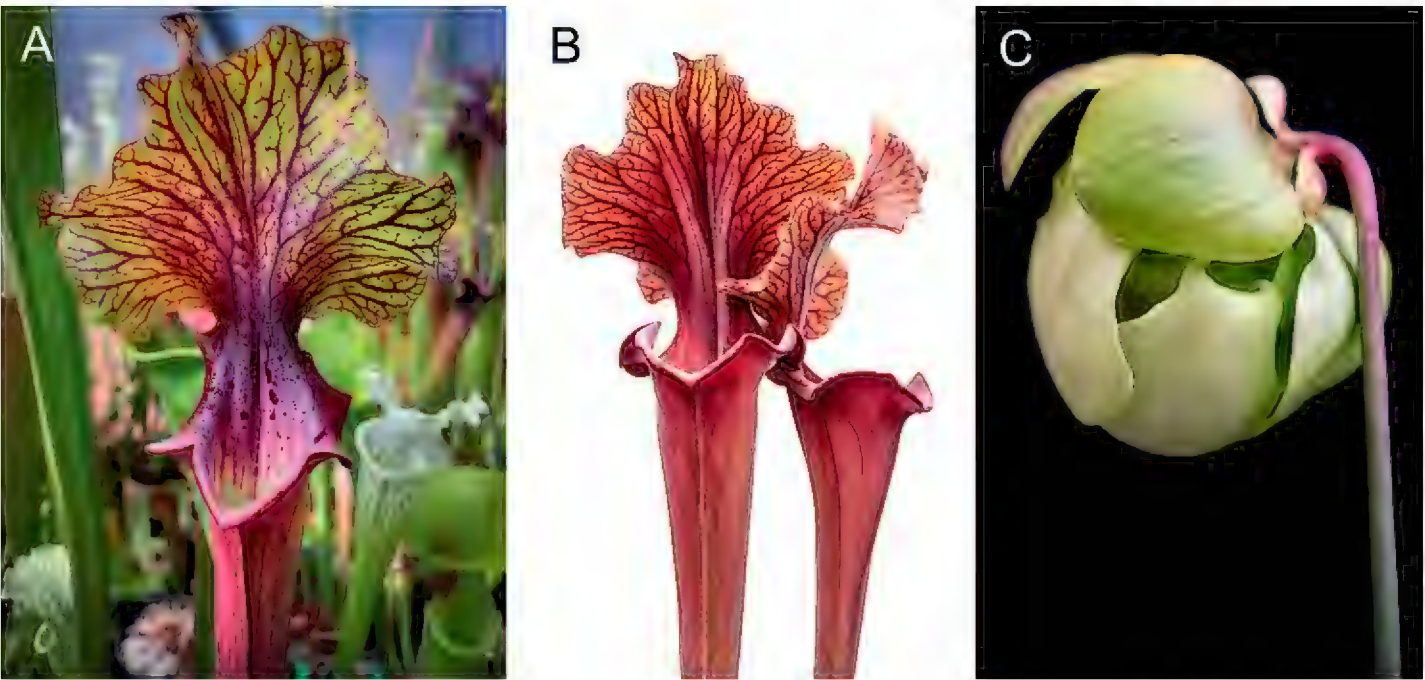


Figure 7: *Sarracenia* ‘Chaos’ pitchers and flower. Photos by (A) Jeremiah Harris and (B & C) Robert Co.

Sarracenia ‘Crown of Thorns’

Submitted: 2 March 2022

Sarracenia ‘Crown of Thorns’ (Fig. 8) originated from a cross by Travis H. Wyman in 2008. The parentage is *S.* ‘Reptilian Rose’ × (*S. flava* var. *rubricorpora* × *S. leucophylla*) and was previously released as clone #10 from this seed set. Seed was sent to me in September of that year. This clone is a sibling to *S.* ‘Chaos’, *S.* ‘Defiance’, and *S.* ‘Pink Champagne.’

Sarracenia ‘Crown of Thorns’ is similar in form to its parent, *S.* ‘Reptilian Rose’, donning an angular nectar roll giving the peristome a “thorned” appearance. It is a compact grower, forming clumps of bright pitchers and semi upright hoods. Early season pitchers emerge with a pale cast throughout the upper portion of the pitcher and are imbued with deep red veins. The contrast intensifies as the season rolls on with the pitcher growing lighter and veins darkening to a deep red. Late in the season, the interior pitcher throat develops deep red hues which contrast beautifully with the bright upper pitcher body.

Pitchers on this plant average 50 cm although larger pitchers have been observed. Flower petals are predominantly pink, sepals are pink with touches of light green. The flower style is pinched and irregular, a trait that is also observed in the flowers of the *S.* ‘Reptilian Rose’ parent.

The name *Sarracenia* ‘Crown of Thorns’ is a biblical reference and was first coined by Phil Faulisi in April of 2015 during a visit in Half Moon Bay, California with fellow grower and friend, Kinjie Coe. The name was fitting for the overall appearance of the plant: glowing white angular pitchers and blood red veins imbued throughout.

To maintain these distinctive characteristics, propagation must be done only by division.

—ROBERT CO • Oregon • USA • rob@thepitcherplantproject.com



Figure 8: *Sarracenia* ‘Crown of Thorns’ pitchers and flower.

Sarracenia ‘Defiance’

Submitted: 2 March 2022

Sarracenia ‘Defiance’ (Fig. 9) originated from a cross by Travis H. Wyman in 2008. The parentage is *S.* ‘Reptilian Rose’ × (*S. flava* var. *rubricorpora* × *S. leucophylla*) and was previously released as clone #11 from this seed set. Seed was sent to me in September of that year. This clone is a sibling to *S.* ‘Chaos’, *S.* ‘Crown of Thorns’, and *S.* ‘Pink Champagne.’

Sarracenia ‘Defiance’ is a stout plant that is similar in form to that of the *S.* ‘Reptilian Rose’ parent. It features the warped and angular nectar roll, but differs in pitcher coloration and has a stouter growth habit. In my conditions, the late season pitchers exhibit attractive contrast. The pale green trap body combined with the bleached hood compliment the wide angular mouth opening quite well. The pitcher mouth will take on a deep rusty red coloration. It is a robust grower and produces a strong spring flush of pitchers. A less robust set is produced in the fall. Pitcher height averages 50 cm, although larger pitchers have been observed.

Flower petals are a peach-reddish hue. Sepals start off light green with a slight red blush that gradually darkens as the flower matures. The coloration and form of the pitchers give this plant a bold and defiant look. Because of this, *Sarracenia* ‘Defiance’ was a fitting name.

To maintain these distinctive characteristics, propagation must be done only by division.

—ROBERT CO • Oregon • USA • rob@thepitcherplantproject.com



Figure 9: *Sarracenia* ‘Defiance’ pitchers and flower.

Sarracenia ‘Lion’s Mane’

Submitted: 2 March 2022

Sarracenia ‘Lion’s Mane’ (Fig. 10) is a remarkable *S. flava* with a distinctive flower. The blossom produces a brilliant vortex of yellow tepals, giving this flower an appearance like a lion’s mane. Under my conditions, it is a compact grower with ornate veined pitchers averaging 30-40 cm tall, although larger pitchers have been observed. Blooms average 30 cm in height. The bloom, comprised of mostly tepals, is sturdy and can last throughout the growing season.

Sarracenia ‘Lion’s Mane’ was named by Wes Buckner for the appearance of the bloom. This incredible flava was discovered and collected with written permission by Wes in Broward County, Florida in 2015.

Propagation must be done by division in order to maintain this plant’s unique characteristics.

—ROBERT CO • Oregon • USA • rob@thepitcherplantproject.com



Figure 10: *Sarracenia* ‘Lion’s Mane’ pitchers and flower.

Submitted: 2 March 2022

Sarracenia ‘Paradox’ (Fig. 11) is a select clone resulting from a cross of *S.* ‘Reptilian Rose’ and *S.* ‘Adrian Slack’ that I did in 2010. It was one of four seeds that germinated from that year’s seed set. Three from that group survived.

The name ‘Paradox’ refers to a combination of contradictory or contrasting qualities. Both parent plants have beautiful characteristics that contrast in nature. *Sarracenia* ‘Reptilian Rose’ has an irregular peristome and deep rich coloration. It is rugged and primordial in appearance. *Sarracenia* ‘Adrian Slack’ has an elegant flowing form that is adorned in vibrant coloration. *Sarracenia* ‘Paradox’ combines the best of both worlds having similar form to *S.* ‘Reptilian Rose’ but with colors influenced by *S.* ‘Adrian Slack’.

In my conditions, the pitchers start off the season with a green exterior and a touch of red around the interior of the peristome. By late season, the top of the hood bleaches out and the interior lid attains a burnt orange glow. This creates an otherworldly contrast with the deep purple/black angular peristome and green body. The combination of contrasting form and visual characteristics reinforce the name of this plant. Early in the season, a strong flush of pitchers is produced. A second set of less robust pitchers are produced in the fall. Pitchers attain an average height of 60 cm, although larger pitchers have been observed.

Flower color is faded pink in overall appearance. Sepals can start the season with hints of light green but take on a pinker hue as the flower matures. The sepals also have an interesting shape that pinch slightly at the base.

Propagation must be done by division in order to maintain this plant’s unique characteristics.

—ROBERT CO • Oregon • USA • rob@thepitcherplantproject.com



Figure 11: *Sarracenia* ‘Paradox’ pitchers and flower.

Sarracenia ‘Pink Champagne’

Submitted: 2 March 2022

Sarracenia ‘Pink Champagne’ (Fig. 12) originated from a cross by Travis H. Wyman in 2008. The parentage is *S.* ‘Reptilian Rose’ × (*S. flava* var. *rubricorpora* × *S. leucophylla*) and was previously released as clone #6 from this seed set. Seed was sent to me in September of that year. This clone is a sibling to *S.* ‘Chaos’, *S.* ‘Crown of Thorns’, and *S.* ‘Defiance.’

Sarracenia ‘Pink Champagne’ is a compact but gorgeously colored plant. It is similar in form to its *S.* ‘Reptilian Rose’ parent with the crenulated nectar roll. Notable characteristics of this plant include an early season flush of exquisite pink pitchers boasting bright fenestrations and angular peristome. Colors deepen on the pitcher as the season progresses. Flowers are yellow and bear a similar marking under the petals as its *S.* ‘Reptilian Rose’ parent. Pitcher height averages about 45-50 cm, although larger pitchers have been observed.

The name *Sarracenia* ‘Pink Champagne’ was coined by my wife, Dahlia, because the appearance of the plant reminded her of a favorite dessert – the Pink Champagne cupcake from Sift Bakery in San Francisco.

Propagation must be done by division in order to maintain this plant’s unique characteristics.

—ROBERT CO • Oregon • USA • rob@thepitcherplantproject.com



Figure 12: *Sarracenia* ‘Pink Champagne’ pitchers and flower. Photos by (A) Robert Co and (B & C) Phil Faulisi.

Sarracenia ‘Thelma’s Lantern’

Submitted: 2 March 2022

Sarracenia ‘Thelma’s Lantern’ (Fig. 13 & back cover) resulted from a cross I did in 2012 between *S. leucophylla* ‘Hurricane Creek White’ and *S. ‘Adrian Slack’*. In June of 2015, I gave a few seedlings of this cross to fellow grower and friend, Bristol Q. This select clone emerged from the group that was under his care.

This phenomenal plant is renowned for its radiance and elegant shape. Spring pitchers are similar in form to its *S. ‘Adrian Slack’* parent, but without the red peristome. Pitchers emerge with bright fenestrations and a gentle webbing of pink veins. As pitchers mature the veining fades, pitchers brighten, and a touch of red develops on the hood column. Light green veins emanate up into the upper portion of the pitcher. Pitcher height averages around 60-75 cm although taller pitchers have been observed. It produces vigorous sets of pitchers in both early and late season. Flowers sepals and petals are pink with yellow style.

Sarracenia ‘Thelma’s Lantern’ is named in honor and memory of my mother.

Propagation must be done by division in order to maintain this plant’s unique characteristics.

—ROBERT Co • Oregon • USA • rob@thepitcherplantproject.com



Figure 13: *Sarracenia* ‘Thelma’s Lantern’ Spring pitchers. Photos by Bristol Q.

Submitted: 17 January 2022

The parents of *Sarracenia* 'Mediterranean Sunrise' (Fig. 14) are *Sarracenia* × *moorei* (red, H61 MK) × *S.* × *moorei* (red, my seedling). The plant is slow growing, but has remarkable pitchers. The tallest pitcher has been 87 centimeters, but the plant reached the maturity only in the 2021 (when it flowered for the first time, with a large yellow flower), so it will likely have taller pitchers in the following years or with different growing conditions. It produces only 2 pitchers per growing crown in each season: 2 in spring (the tallest and biggest), 2 in summer (tall but thin), and 2 in autumn (short but quite large). Some phyllodia can appear, but generally it does not produce many.

Pitchers have a brilliant color, with a bright ruby-red tube in contrast to a white lid with red veins. Autumn pitchers are somewhat less colorful with a red veiny exterior and a creamy interior, and a more cream-white lid. Autumn pitchers are quite long lasting and generally dry in late fall or early winter, especially after the first frosts. The rhizome is big but does not produce many lateral shoots.

All of these details are results obtained in my growing conditions in the Po Valley in Northern Italy. It is possible that by growing this cultivar in more mild sunny conditions, it can show the spring colors on autumn pitchers too.

Sarracenia 'Ellie Wang' shows a similar color pattern, but *S.* 'Mediterranean Sunrise' differs from 'Ellie Wang' for these features:

- **Shape:** 'Mediterranean Sunrise' has a less round peristome shape and a less elongated and thinner "neck" than 'Ellie Wang'
- **Color:** 'Mediterranean Sunrise' has a very bright brilliant red tube and a white veined lid. In the "neck" there is a darker red throat patch resembling a *S. flava* var. *rugelii* blotch. 'Ellie Wang' has more uniform red tubes without any darker nuance and the lid is less veiny. These colors, after appearing some days after the pitchers are opened, get darker and darker in the season and are permanent and well defined for the entire life of the leaf. Also, the color of the flower is different: 'Mediterranean Sunrise' has a yellow flower, as *S. flava*; on the contrary 'Ellie Wang' has red flowers, as *S. leucophylla*.



Figure 14: *Sarracenia* 'Mediterranean Sunrise' L-R: Spring (May) pitchers, Spring (May) lid top, Autumn (September) pitcher, and flower.

- **Size:** In my conditions, growing these two different cultivars together, and also according to the features reported in the *S. 'Ellie Wang'* description, 'Mediterranean Sunrise' seems to produce fewer pitchers than 'Ellie Wang' during the growing season (only 1 or 2 for each crown in spring, and the same number in summer and autumn, reaching a production of about 6 pitchers for each adult crown in the whole year), but bigger (87 cm at the moment the maximum size reached in my conditions against the 60-65 cm pitchers of 'Ellie Wang'), with only very few phyllodia, if any.

I decided to use the name 'Mediterranean Sunrise' for this plant because of its brilliant colors, typical of the summer days when the sun, clear and brilliant, rises or sets as a yellow/white light on a reddish sky horizon, often seen at my grandparents' house, on Elba Island, in the Mediterranean Sea. I decided to use the word "sunrise" instead of "sunset" to give a more positive meaning to the name: a sunrise, the start of a new day, the start of a new year, hoping everybody can have a new start and a new life after the sufferings we have all had during the COVID-19 pandemic.

This cultivar must be propagated vegetatively only.

—DANIELE RIGHETTI • via cavezzali 10/B • 20127 Milano • Italy • daniele.righetti11@gmail.com



A GARDEN'S CHRONICLE

Botanical Illustrations

Botanical prints
Bookmarks & Stickers
Commissions:
Scientific pen and ink line drawings
for academic papers and watercolors



Webshop : <https://www.etsy.com/fr/shop/Agardenschronicle>
Mail: meyfr@yahoo.fr

